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LETTER OF TRANSMITTAL

Date:	July 24, 2014	Project No:	C1165-0301
To:	Erica Bergman, NJDEP		
From:	Phil Goodrum, Integral Consulting Inc.		
Re:	West Deptford Public Water System Quarter 2 Sampling Results (NJ 0820001) Solvay West Deptford Plant 10 Leonard Lane West Deptford, NJ 08086-2150		

The following is enclosed: ☐ for your use ☒ for your files ☐ per your request

Quantity	Item
2	Data Report, Quarter 2, 2014 – West Deptford PWS Sampling on May 1, 2014
2	CDs, including: <ul style="list-style-type: none">- Data Report- Eurofins Laboratory Reports- TestAmerica Laboratory Reports- EDDs

Remarks:

On behalf of Solvay Specialty Polymers USA, LLC (Solvay), please find enclosed the sampling results for perfluoroalkyl compounds (PFCs) from the West Deptford public water system (PWS). Enclosed are two copies of the data in New Jersey Department of Environmental Protection (NJDEP) electronic data delivery (EDD) format and a summary report for your internal distribution. These EDDs were verified by Solvay to be complete and free of errors with NJDEP's online tool, Electronic Data Submittal Applications (EDSA7) version 7.1.5.

The report includes a description of the wells that were sampled, a figure illustrating where samples were collected within the distribution system, and a set of tables summarizing the laboratory results. In addition, the report includes a table that summarizes some of the current state and federal interim drinking water guidelines for PFCs. While these guidelines are non-binding at this time, they may provide West Deptford PWS with a helpful perspective to facilitate communication of findings to the community. Finally, a table is included to summarize the results of a screening of NJDEP drinking water criteria and groundwater criteria for other target analytes.

This enclosure for West Deptford constitutes the fifth PWS data report for the second round of sampling (Quarter 2), conducted on May 1 2014. This sampling repeated the Quarter 1 sampling event at West Deptford on October 30, 2013, December 12, 2013, and January 23, 2014. Sampling will continue on approximately a quarterly basis throughout 2014.

At the Department's request, Integral sent information regarding the proposed sampling locations to Sandy Krietzman on April 30 (prior to the May 1 event). The samples collected largely reflect the plans that were presented. Details regarding the status of the treatment and distribution systems during the sampling events are presented in the report.

Solvay has adopted a rigorous quality assurance protocol for sampling, chain of custody documentation, analysis, and reporting of results. Each PWS sampling event includes field duplicates, laboratory quality control samples, and third party (independent) data validation. Please feel free to contact Mitch Gertz with any questions.

Sent via:

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U.S. Mail

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Fax

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Other

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Federal Express

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Courier

cc: Mike Douglas, West Deptford Water and Sewer Superintendent
Mitch Gertz, Solvay Specialty Polymers USA, LLC
Thomas Buggey, LSRP, Roux Associates Inc.
Nidal Azzam, U.S. Environmental Protection Agency
Andrew Park, U.S. Environmental Protection Agency
Chris Roe, Fox Rothschild LLP

DATA REPORT QUARTER 2, 2014

**West Deptford PWS Sampling on
May 1, 2014**

Prepared for
Solvay Specialty Polymers USA, LLC
10 Leonard Lane
West Deptford, NJ 08086

Prepared by
Integral Consulting Inc.
200 Harry S. Truman Parkway
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Annapolis, MD 21401

July 24, 2014

DATA REPORT
QUARTER 2, 2014

West Deptford PWS
Sampling on May 1, 2014

Prepared for
Solvay Specialty Polymers USA, LLC
10 Leonard Lane
West Deptford, NJ 08086



200 Harry S. Truman Parkway
Suite 330
Annapolis, MD 21401

July 24, 2014

On May 1, 2014, Integral Consulting Inc. (Integral), consultant to Solvay Specialty Polymers USA, LLC (Solvay), began Quarter 2 sampling and collected water samples from the six water supply wells maintained by the West Deptford public water system (PWS), as well as three storage tanks (Jessup Rd. supply tank, Red Bank Ave. supply tank, Mantua Grove Rd. supply tank) and one distribution point (the Greenfields Fire Company). These locations were selected to provide supplemental information on the condition of drinking water within the actual distribution system. The samples were submitted to Eurofins Eaton Analytical, Inc. (Monrovia, CA), a New Jersey-certified analytical testing laboratory for analysis of perfluoroalkyl compounds (PFCs). In addition, split samples were submitted to TestAmerica Laboratories, Inc. (Edison, NJ), also a New Jersey-certified analytical laboratory, for analysis of additional target analytes.

Figure 1 illustrates where samples were collected within the West Deptford PWS. Based on our understanding of West Deptford PWS operations, all wells except Well #3 and Well #4 were active during the sampling event on May 1, 2014. The concentrations measured at individual wells do not directly reflect the finished water that is distributed to the community because the finished water is a blend of sources. West Deptford PWS, by state requirement, obtains at least 35 percent of its blended water from the New Jersey American Water Company water treatment plant in Delran, NJ. Drinking water was additionally provided by the New Jersey American Water treatment plant. Raw water was sampled from all six wells (Wells #3 through #8). Treated water was sampled from Wells #5 through #8. Treated drinking water from respective storage tanks (listed above) was also collected, as well as drinking water from the Greenfields Fire Company.

RESULTS FROM MAY 1 SAMPLING EVENT

Table 1 summarizes the concentrations of PFCs measured in each raw, treated, and drinking water sample taken on May 1, as well as the prior sampling events on October 30, 2013, December 12, 2013, and January 23, 2014. Table 2 summarizes all detected (i.e., quantified and estimated) PFC concentrations from all events, while Table 3 presents laboratory method detection limits (MDLs) and method reporting limits (MRLs). Second quarter data from Tables 1–3 are also provided in electronic files, using the electronic data delivery (EDD) format specified by New Jersey Department of Environmental Protection (NJDEP). These EDDs were verified by Solvay to be complete and free of errors with NJDEP's online tool, Electronic Data Submittal Applications (EDSA7) version 7.1.5, available at www.state.nj.us/dep/srp/hazsite/software/edsa/. Laboratory results for the samples collected on May 1, 2014 were validated by Laboratory Data Consultants, Inc. (Carlsbad, CA), an independent third party validator.

PFCs are currently unregulated in drinking water. Table 4 summarizes a range of nonbinding drinking water guidelines for perfluorooctanoate acid (PFOA) and perfluorooctanesulfonic acid

(PFOS) available from U.S. Environmental Protection Agency, New Jersey, North Carolina, and Minnesota. For the Quarter 2 sampling at West Deptford, all samples were below drinking water guidelines with detected concentrations ranging from 0.36 to 6.2 parts per trillion (ppt) for PFOA. PFOS was detected at or below 1.3 ppt in all samples.

Additional PFCs were detected for which drinking water guidelines have not been established. Perfluorononanoic acid (PFNA) was detected in all sample locations except Well #4. At Well #3, PFNA in raw water was detected at 26 ppt. All other wells were detected above the MDL, but below the MRL (J-flagged).

Variability in PFC Results across Sampling Events

In Quarter 2, PFNA at Well #3 represents the highest detected PFC concentrations in West Deptford with results for other analytes and other locations either less than their respective MDLs (not detected), or detected below respective MRLs (J-flagged), or detected below established guidelines (e.g., PFOA, PFOS). Table 3 summarizes the MDLs and MRLs.

PFNA results at Well #3 across sampling events (Quarters 1 and 2) ranges from 26 to 38 ppt. Another quantitative index of variability is the relative percentage difference (RPD), which is calculated as the range (absolute difference) divided by the arithmetic mean for the past events. For example, if two results differ by 3 ppt and the average concentration is 10 ppt, the RPD is 30 percent (i.e., $100\% \times 3/10$). The RPD for PFNA at Well #3 (raw) is 36 percent.

Expanded Analyte Summary

The following constituents and chemical classes were included in the target analyte list in addition to PFCs and conventional analytes:

- Radium 226/228
- Regulated compound list for semivolatile organic compounds (SVOCs)
- Full list of volatile organic compounds (VOCs) as well as 15 tentatively identified compounds (TICs)
- Pesticides and polychlorinated biphenyls (PCBs)
- Metals (inductively coupled plasma [ICP] methods)
- Inorganic anions
- Total dissolved solids (TDS)
- Chlorinated herbicides.

Table 5 presents the results for the chemicals on the expanded target analyte list that were detected in one or more samples compared with current groundwater or drinking water standards.

Drinking Water Results

Four constituents exceeded current drinking water criteria: TDS, iron, sodium, and zinc. TDS at Well #8 raw exceeded the criteria value of 500 parts per million (ppm) with a concentration of 1,170 ppm (treated water was not detected). The criteria for iron (300 parts per billion (ppb)) was exceeded at Well #3 (330 ppb), Well #5 treated (342 ppb), and Well #8 raw (467 ppb) and treated (375 ppb). Well #4 had a parent and duplicate sample taken, but only the duplicate sample exceeded the iron criteria (380 ppb), while the parent sample was not detected for iron. Iron also exceeded the drinking criteria at the Jessup Tank (460 ppb). The sodium drinking criteria (50,000 ppb) was exceeded at Well #4 (parent and duplicate: 75,000 ppb and 73,500 ppb, respectively), Well #5 raw (93,700 ppb) and treated (86,200 ppb), Well #6 raw (60,500 ppb) and treated (51,300 ppb), Well #7 raw (57,800 ppb), and Well #8 treated (69,100 ppb). Water from Mantua Grove and Red Bank tanks also exceeded sodium criteria (59,100 ppb and 54,800 ppb, respectively). Finally, zinc's 5,000 ppb drinking criteria was exceeded in the Well #8 raw sample (126,000 ppb).

An additional two constituents were detected for which drinking water guidelines have not been established. Chlorodibromomethane was detected at Well #7 treated (1.7 ppb) as well as at Greenfields Fire Hall (parent and duplicate, 3.2 ppb and 3 ppb, respectively), and at Jessup Tank (1.6 ppb). Dichlorobromomethane was detected at Well #6 treated (1.2 ppb) and Well #7 treated (1.8 ppb) as well as at Greenfields Fire Hall (4.5 ppb for parent and duplicate), Jessup Tank (2.4 ppb), and Red Bank Tank (1.1 ppb).

Groundwater Results

Six constituents exceeded current groundwater criteria. For three of these constituents (TDS, iron, and sodium), the groundwater and drinking water criteria are the same and the results are summarized above. For zinc, Well #8 raw (126,000 ppb) exceeded the criteria (2,000 ppb). For lead, the groundwater criterion of 5 ppb was slightly exceeded at Well #8 raw (7.3 ppb). In addition, two VOCs, chlorodibromomethane and dichlorobromomethane, were both detected at locations and concentrations summarized above which all exceeded the groundwater criterion of 1 ppb applied to both analytes.

Table 1. West Deptford PWS PFC Concentrations by Well, both Detects and Nondetects ^{a,b}

Well or Tap Location	Sample No.	Sample Type	Field Duplicate	Sample Date	Units	PFOA	PFOS	PFNA	PFDA	PFUnDA	PFDODA	PFTTrDA
FieldBlank	FB0001	QA/QC		5/1/2014	ng/L	0.20 U	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
Well #3 (WD-PWS-3)	MUA-WELL3-GW-RW	Raw water		10/30/2013	ng/L	7.6	3.8 U *	38	0.3 U	0.4 U	0.6 U	0.8 U
	GW0049	Raw water		1/23/2014	ng/L	6.6	1.4 J	36	0.3 U	0.4 U	0.6 U	0.8 U
	GW0050	Raw water	X	1/23/2014	ng/L	6.8	1.4 J	37	0.3 U	0.4 U	0.6 U	0.8 U
	GW0128	Raw water		5/1/2014	ng/L	6.2	1.2 J	26	0.3 U	0.4 U	0.6 U	0.8 U
Well #4 (WD-PWS-4)	MUA-WELL4-GW-RW	Raw water		10/30/2013	ng/L	0.38 U *	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0053	Raw water		1/23/2014	ng/L	0.5 U	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0129	Raw water	X	5/1/2014	ng/L	0.5 BR	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0130	Raw water		5/1/2014	ng/L	0.4 BR	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
Well #5 (WS-PWS-5)	MUA-WELL5-GW-RW	Raw water		10/30/2013	ng/L	0.31 U *	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	MUA-WELL5-GW-FW	Raw water ^c		10/30/2013	ng/L	0.37 U *	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	MUA-WELL5-GW-FW-DUP	Raw water ^c	X	10/30/2013	ng/L	0.31 U *	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0052	Raw water		1/23/2014	ng/L	0.4 UJ	0.2 UJ	0.4 UJ	0.3 UJ	0.4 UJ	0.6 UJ	0.8 UJ
	GW0131	Raw water		5/1/2014	ng/L	0.7 J	0.2 U	0.5 J	0.3 U	0.4 U	0.6 U	0.8 U
	GW0132	Treated water		5/1/2014	ng/L	0.5 BR	0.2 U	0.7 J	0.3 U	0.4 U	0.6 U	0.8 U
Well #6 (WS-PWS-6)	MUA-WELL6-GW-RW	Raw water		10/30/2013	ng/L	1.3 U *	1.9 U *	2.1 U *	0.3 U	0.4 U	0.6 U	0.8 U
	GW0045	Raw water		1/23/2014	ng/L	1.4 U	0.7 J	0.6 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0133	Raw water		5/1/2014	ng/L	1.4 J	1.0 J	0.8 J	0.3 U	0.4 U	0.6 U	0.8 U
	GW0134	Treated water		5/1/2014	ng/L	1.6 J	0.7 J	0.9 J	0.3 U	0.4 U	0.6 U	0.8 U
Well #7 (WD-PWS-7)	MUA-WELL7-GW-RW	Raw water		10/30/2013	ng/L	0.68 U *	0.2 U *	0.4 U *	0.3 U	0.4 U	0.6 U	0.8 U
	GW0051	Raw water		1/23/2014	ng/L	0.6 U	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0135	Raw water		5/1/2014	ng/L	0.5 BR	0.2 J	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0136	Treated water		5/1/2014	ng/L	1.4 J	0.5 J	1.0 J	0.3 U	0.4 U	0.6 U	0.8 U
Well #8 (WD-PWS-8)	MUA-WELL8-GW-RW	Raw water		10/30/2013	ng/L	1 U *	0.2 U	0.65 U *	0.3 U	0.4 U	0.6 U	0.8 U
	GW0137	Raw water		5/1/2014	ng/L	1.0 J	0.2 U	1.0 J	0.3 U	0.4 U	0.6 U	0.8 U
	GW0138	Treated water		5/1/2014	ng/L	1.0 J	0.2 U	1.3 J	0.3 U	0.4 U	0.6 U	0.8 U
Restroom Sink Tap	GW0023	Drinking water		12/12/2013	ng/L	0.4 U	0.2 U	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0024	Drinking water		12/12/2013	ng/L	3.2	1.6 J	1 J	0.3 U	0.4 U	0.6 U	0.8 U
	GW0025	Drinking water		12/12/2013	ng/L	3.9	1.2 J	13	0.3 U	0.4 U	0.6 U	0.8 U
	GW0026	Drinking water		12/12/2013	ng/L	3.4	1.1 J	8.2	0.3 U	0.4 U	0.6 U	0.8 U
Jessup Tank - Hydrant	GW0056	Drinking water		1/23/2014	ng/L	2.6	0.6 J	12	0.3 U	0.4 U	0.6 U	0.8 U
	GW0139	Drinking water		5/1/2014	ng/L	1.4 J	0.5 J	1.0 J	0.3 U	0.4 U	0.6 U	0.8 U
Red Bank Tank - Hydrant	GW0046	Drinking water		1/23/2014	ng/L	3.4	0.9 J	13	0.3 U	0.4 U	0.6 U	0.8 U
	GW0140	Drinking water		5/1/2014	ng/L	1.4 J	0.9 J	0.8 J	0.3 U	0.4 U	0.6 U	0.8 U
Mantua Grove Tank - Hydrant	GW0054	Drinking water		1/23/2014	ng/L	1.5 U	0.5 J	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0055	Drinking water	X	1/23/2014	ng/L	1.3 U	0.5 J	0.4 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0141	Drinking water		5/1/2014	ng/L	1.2 J	0.2 U	1.2 J	0.3 U	0.4 U	0.6 U	0.8 U

Table 1. West Deptford PWS PFC Concentrations by Well, both Detects and Nondetects ^{a,b}

Well or Tap Location	Sample No.	Sample Type	Field		Units	PFOA	PFOS	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA
			Duplicate	Sample Date								
Greenfields Fire Hall Tap	GW0048	Drinking water		1/23/2014	ng/L	1.9 J	0.7 J	0.5 U	0.3 U	0.4 U	0.6 U	0.8 U
	GW0142	Drinking water		5/1/2014	ng/L	1.8 J	1.1 J	0.41 J	0.3 U	0.4 U	0.6 U	0.8 U
	GW0143	Drinking water	X	5/1/2014	ng/L	2.0 J	1.3 J	0.58 J	0.3 U	0.4 U	0.6 U	0.8 U

Notes:
Drinking water = water supplied to the community represented by sample collected from the system after mixing of treated water from multiple wells and/or supplemental water
EPA = U.S. Environmental Protection Agency
NJDEP = New Jersey Department of Environmental Protection
PFC = perfluoroalkyl compound
PFDA = perfluorodecanoic acid
PFDoDA = perfluorododecanoic acid
PFNA = perfluorononanoic acid
PFOA = perfluorooctanoate acid
PFOS = perfluorooctanesulfonic acid
PFTrDA = perfluorotridecanoic acid
PFUnDA = perfluoroundecanoic acid
PWS = public water system
QA/QC = quality assurance and quality control
Raw water = raw water sample collected from well (prior to treatment)
Treated water = sample collected from well after treatment but before mixing with water from other wells or supplemental water

BR = result was qualified as nondetect because the estimated concentration was less than three times the concentration detected in the associated field blank.
J = result was detected at or greater than the method detection limit and less than method reporting limit
U = result was not detected at the stated detection limit

^a Laboratories reported detected concentrations to two significant figures, while nondetects are reported as the method detection limit, which were reported to one significant figure. Units for all results are reported here as nanograms per liter (ng/L) or parts per trillion (ppt).
^b Results reported by Eurofins Eaton Analytical, Inc.
^c Sample at Well #5 that has undergone Klenphos treatment, not hypochlorination.

* = Concentrations in field blank were 2.2J, 1.9J, and 1.4J ng/L for PFNA, PFOS, and PFOA, respectively, which exceed 1.0 ng/L (one-third the method reporting limit). Citing EPA Method 537, NJDEP has indicated that result is negated because concentration is not more than ten times the concentration detected in the field blank.

Table 2. West Deptford PWS PFC Concentrations by Well, Detected Analytes Only ^{a,b}

Well or Tap Location	Sample No.	Sample Type	Field Duplicate	Sample Date	Units	PFOA	PFOS	PFNA
Well #3 (WD-PWS-3)	MUA-WELL3-GW-RW	Raw water		10/30/2013	ng/L	7.6	--	38
	GW0049	Raw water		1/23/2014	ng/L	6.6	1.4 J	36
	GW0050	Raw water	X	1/23/2014	ng/L	6.8	1.4 J	37
	GW0128	Raw water		5/1/2014	ng/L	6.2	1.2 J	26
Well #4 (WD-PWS-4)	MUA-WELL4-GW-RW	Raw water		10/30/2013	ng/L	--	--	--
	GW0053	Raw water		1/23/2014	ng/L	--	--	--
	GW0129	Raw water	X	5/1/2014	ng/L	0.50 J	--	--
	GW0130	Raw water		5/1/2014	ng/L	0.36 J	--	--
Well #5 (WD-PWS-5)	MUA-WELL5-GW-RW	Raw water		10/30/2013	ng/L	--	--	--
	MUA-WELL5-GW-FW	Raw water ^c		10/30/2013	ng/L	--	--	--
	MUA-WELL5-GW-FW-DUP	Raw water ^c	X	10/30/2013	ng/L	--	--	--
	GW0052	Raw water		1/23/2014	ng/L	--	--	--
	GW0131	Raw water		5/1/2014	ng/L	0.69 J	--	0.52 J
	GW0132	Treated water		5/1/2014	ng/L	0.49 J	--	0.73 J
Well #6 (WD-PWS-6)	MUA-WELL6-GW-RW	Raw water		10/30/2013	ng/L	--	--	--
	GW0045	Raw water		1/23/2014	ng/L	--	0.7 J	--
	GW0133	Raw water		5/1/2014	ng/L	1.4 J	1.0 J	0.81 J
	GW0134	Treated water		5/1/2014	ng/L	1.6 J	0.73 J	0.86 J
Well #7 (WD-PWS-7)	MUA-WELL7-GW-RW	Raw water		10/30/2013	ng/L	--	--	--
	GW0051	Raw water		1/23/2014	ng/L	--	--	--
	GW0135	Raw water		5/1/2014	ng/L	0.46 J	0.20 J	--
	GW0136	Treated water		5/1/2014	ng/L	1.4 J	0.53 J	1.0 J
Well #8 (WD-PWS-8)	MUA-WELL8-GW-RW	Raw water		10/30/2013	ng/L	--	--	--
	GW0137	Raw water		5/1/2014	ng/L	0.95 J	--	1.0 J
	GW0138	Treated water		5/1/2014	ng/L	1.0 J	--	1.3 J
Restroom Sink Tap	GW0023	Drinking water		12/12/2013	ng/L	--	--	--
	GW0024	Drinking water		12/12/2013	ng/L	3.2	1.6 J	1 J
	GW0025	Drinking water		12/12/2013	ng/L	3.9	1.2 J	13
	GW0026	Drinking water		12/12/2013	ng/L	3.4	1.1 J	8.2
Jessup Tank - Hydrant	GW0056	Drinking water		1/23/2014	ng/L	2.6	0.6 J	12
	GW0139	Drinking water		5/1/2014	ng/L	1.4 J	0.52 J	1.0 J
Red Bank Tank - Hydrant	GW0046	Drinking water		1/23/2014	ng/L	3.4	0.9 J	13
	GW0140	Drinking water		5/1/2014	ng/L	1.4 J	0.91 J	0.82 J
Mantua Grove Tank - Hydrant	GW0054	Drinking water		1/23/2014	ng/L	--	0.5 J	--
	GW0055	Drinking water	X	1/23/2014	ng/L	--	0.5 J	--
	GW0141	Drinking water		5/1/2014	ng/L	1.2 J	--	1.2 J
Greenfields Fire Hall Tap	GW0048	Drinking water		1/23/2014	ng/L	1.9 J	0.7 J	--
	GW0142	Drinking water		5/1/2014	ng/L	1.8 J	1.1 J	0.41 J
	GW0143	Drinking water	X	5/1/2014	ng/L	2.0 J	1.3 J	0.58 J

Notes:

Drinking water = water supplied to the community represented by sample collected from the system after mixing of treated water from multiple wells and/or supplemental water

PFC = perfluoroalkyl compound

PFNA = perfluorononanoic acid

PFOA = perfluorooctanoic acid

PFOS = perfluorooctanesulfonic acid

PWS = public water system

Raw water = raw water sample collected from well (prior to treatment)

Treated water = sample collected from well after treatment but before mixing with water from other wells or supplemental water

-- = not applicable

J = result was detected at or greater than the method detection limit and less than method reporting limit

^a Laboratories reported detected concentrations to two significant figures, while nondetects are reported as the method detection limit, which were reported to one significant figure. Units for all results are reported here as nanograms per liter (ng/L) or parts per trillion (ppt).

^b Results reported by Eurofins Eaton Analytical, Inc.

^c Sample at Well #5 that has undergone Klenphos treatment, not hypochlorination.

Table 3. West Deptford PWS PFC Detection Limits by Well for Samples Collected May 1, 2014 ^{a,b}

Well or Tap Location	Sample No.	Sample Type	Field Duplicate	Sample Date	Lab	Units	PFOA		PFOS		PFNA		PFDA		PFUnA		PFDoDA		PFTTrDA	
							MDL	MRL	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL
FieldBlank	FB0001	QA/QC		5/12/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
Well #3 (WD-PWS-3)	MUA-WELL3-GW-RW	Raw water		10/30/2013	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	2.5	0.8	3
	GW0049	Raw water		1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0050	Raw water	X	1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0128	Raw water		5/1/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
Well #4 (WD-PWS-4)	MUA-WELL4-GW-RW	Raw water		10/30/2013	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	GW0053	Raw water		1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0129	Raw water	X	5/1/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0130	Raw water		5/1/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
Well #5 (WD-PWS-5)	MUA-WELL5-GW-RW	Raw water		10/30/2013	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	MUA-WELL5-GW-FW	Raw water ^c		10/30/2013	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	MUA-WELL5-GW-FW-DUP	Raw water ^c	X	10/30/2013	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	GW0052	Raw water		1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0131	Raw water		5/1/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0132	Treated water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
Well #6 (WD-PWS-6)	MUA-WELL6-GW-RW	Raw water		10/30/2013	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	GW0045	Raw water		1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0133	Raw water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	GW0134	Treated water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
Well #7 (WD-PWS-7)	MUA-WELL7-GW-RW	Raw water		10/30/2013	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	GW0051	Raw water		1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0135	Raw water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	GW0136	Treated water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
Well #8 (WD-PWS-8)	MUA-WELL8-GW-RW	Raw water		10/30/2013	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	GW0137	Raw water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
	GW0138	Treated water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
Restroom Sink Tap	GW0023	Drinking water		12/12/2013	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0024	Drinking water		12/12/2013	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0025	Drinking water		12/12/2013	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0026	Drinking water		12/12/2013	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
Greenfields Fire Hall Tap	GW0048	Drinking water		1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0142	Drinking water		5/1/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0143	Drinking water	X	5/1/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
Jessup Tank - Hydrant	GW0056	Drinking water		1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0139	Drinking water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
Mantua Grove Tank - Hydrant	GW0054	Drinking water		1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0055	Drinking water	X	1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0141	Drinking water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3
Red Bank Tank - Hydrant	GW0046	Drinking water		1/23/2014	EEA	ng/L	0.2	2.5	0.2	2.5	0.4	2.5	0.3	2.5	0.4	2.5	0.6	2.5	0.8	2.5
	GW0140	Drinking water		5/1/2014	EEA	ng/L	0.2	3	0.2	3	0.4	3	0.3	3	0.4	3	0.6	3	0.8	3

Table 3. West Deptford PWS PFC Detection Limits by Well for Samples Collected May 1, 2014 ^{a,b}

Notes:
Drinking water = water supplied to the community represented by sample collected from the system after mixing of treated water from multiple wells and/or supplemental water
MDL = method detection limit
MRL = method reporting limit
PFC = perfluoroalkyl compound
PFDA = perfluorodecanoic acid
PFDoDA = perfluorododecanoic acid
PFNA = perfluorononanoic acid
PFOA = perfluorooctanoic acid
PFOS = perfluorooctanesulfonic acid
PFTrDA = perfluorotridecanoic acid
PFUnDA = perfluoroundecanoic acid
PWS = public water system
QA/QC = quality assurance and quality control
Raw water = raw water sample collected from well (prior to treatment)
Treated water = sample collected from well after treatment but before mixing with water from other wells or supplemental water

^a Units for all results are nanograms per liter (ng/L) or parts per trillion (ppt). Laboratories reported method detection limits to one significant figure and quantitation limits to two significant figures.
^b Results reported by Eurofins Eaton Analytical, Inc.
^c Sample at Well #5 that has undergone Klenphos treatment, not hypochlorination.

Table 4. Federal and State PFC Guidelines for Drinking Water

Agency	Units	Chemical Name ^a						
		PFOA	PFOS	PFNA	PFDA	PFUnDA	PFDoDA	PFTTrDA
U.S. Environmental Protection Agency ^b	ng/L	400	200	--	--	--	--	--
North Carolina Department of Environmental and Natural Resources ^c	ng/L	200	--	--	--	--	--	--
New Jersey Department of Environmental Protection ^d	ng/L	40	--	--	--	--	--	--
Minnesota Department of Health ^e	ng/L	300	300	--	--	--	--	--

Sources:

MDH. 2013. Health guidelines for perfluorochemicals (PFCs) in drinking water. www.health.state.mn.us/divs/eh/hazardous/topics/pfcs/drinkingwater.html. Minnesota Department of Health, Environmental Health Division, St. Paul, MN.

NCDENR. 2013. Appendix #1: Interim maximum allowable concentrations (IMACs). pp. 23-24. In: North Carolina Administrative Code Title 15A - Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina. Last amended April 1. Available at: <http://portal.ncdenr.org/web/wq/ps/csu/gwstandards>. North Carolina Department of Environmental and Natural Resources, Division of Water Quality, Raleigh, NC. 31 pp.

NJDEP. 2007. Determination of perfluorooctanoic acid (PFOA) in aqueous samples. Final Report. New Jersey Department of Environmental Protection, Division of Water Supply, Bureau of Safe Drinking Water, Trenton, NJ. 17 pp. January.

USEPA. 2009. Provisional health advisories for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). Available at: http://water.epa.gov/action/advisories/drinking/upload/2009_01_15_criteria_drinking_pha-PFOA-PFOS.pdf. U.S. Environmental Protection Agency. 5 pp. January 8.

Notes:

PFC = perfluoroalkyl compound

PFDA = perfluorodecanoic acid

PFDoDA = perfluorododecanoic acid

PFNA = perfluorononanoic acid

PFOA = perfluorooctanoate acid

PFOS = perfluorooctanesulfonic acid

PFTTrDA = perfluorotridecanoic acid

PFUnDA = perfluoroundecanoic acid

-- = provisional guidelines are not available for drinking water

^a Units for all results are parts per trillion (ppt).

^b USEPA (2009) provisional drinking water advisory for short-term exposure.

^c NCDENR (2013) recommended interim maximum allowable concentration (IMAC) in drinking water, effective date December 6, 2006.

^d NJDEP (2007) health-based guidance value intended to protect for chronic (lifetime) exposure.

^e MDH (2011) health risk limit (HRL) in drinking water for chronic exposure.

Table 5. West Deptford PWS Ground and Drinking Water Standard Exceedances, Detected Analytes Only

Chemical Group/ Analyte	Screening Standards			West Deptford PWS Results Exceeding Standards by Well or Tap Location and Sample Number ^a															
	NJDEP Ground Water Quality Standard ^b Class IIA	NJDEP Drinking Water Standard	Units	Greenfields Fire Hall Tap		Jessup Tank -	Mantua Grove	Red Bank	Well #3	Well #4		Well #5		Well #6		Well #7		Well #8	
				GW0142 ^{c,d}		Hydrant	Tank - Hydrant	Tank	(WD-PWS-3)	(WD-PWS-4)		(WD-PWS-5)		(WD-PWS-6)		(WD-PWS-7)		(WD-PWS-8)	
				GW0142 ^{c,d}	GW0143 ^{c,d}	GW0139	GW0141	GW0140	GW0128	GW0129 ^{c,e}	GW0130 ^{c,e}	GW0131	GW0132	GW0133	GW0134	GW0135	GW0136	GW0137	GW0138
				Drinking Water	Drinking Water	Drinking Water	Drinking Water	Drinking Water	Raw Water	Raw Water	Raw Water	Raw Water	Treated Water	Raw Water	Treated Water	Raw Water	Treated Water	Raw Water	Treated Water
Conventional																			
Total dissolved solids	500	500	mg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,170	--
Metals																			
Iron	300	300	µg/L	--	--	460	--	--	330	380 ^f	--	--	342	--	--	--	--	467	375
Lead	5	15	µg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.3	--
Sodium	50,000	50,000	µg/L	--	--	--	59,100	54,800	--	73,500	75,000	93,700	86,200	60,500	51,300	57,800	--	--	69,100
Zinc	2,000	5,000	µg/L	--	--	--	--	--	--	--	--	--	--	--	--	--	--	126,000	--
VOCs																			
Chlorodibromomethane	1	NA	µg/L	3.2	3	1.6	--	--	--	--	--	--	--	--	--	--	1.2	--	--
Dichlorobromomethane	1	NA	µg/L	4.5	4.5	2.4	--	1.1	--	--	--	--	--	--	1.2	--	1.8	--	--

Sources:
NJDEP. 2011. Ground water quality standards - Class IIA by constituent. Available at: www.nj.gov/dep/standards/ground%20water.pdf. New Jersey Department of Environmental Protection, NJ. 7 pp. July 27.
NJDEP. 2009. Drinking water standards by constituents. Available at: www.nj.gov/dep/standards/drinking%20water.pdf. New Jersey Department of Environmental Protection, NJ. 4 pp. October 13.

Notes:
NJDEP = New Jersey Department of Environmental Protection
PWS = public water system
VOC = volatile organic compound
-- = not applicable; no exceedance

^a Results were validated by TestAmerica, but data were not submitted for third party validation.
^b NJDEP Ground Water Quality Standards for Class IIA constituents. Standards were selected as the higher of the practical quantitation level and the ground water quality standard.

^c Field duplicates and parent samples are summarized as follows:

Field Duplicate	Parent
GW0129	GW0130
GW0143	GW0142

^d Relative percent difference (i.e., range divided by average) of parent/duplicate pair ranges from 0 to 6.5 percent.
^e Relative percent difference (i.e., range divided by average) of parent/duplicate pair ranges from 2 to 83 percent.
^f Results for the parent sample (GW0130) did not exceed the ground or drinking water standards. The relative percent difference between the parent/duplicate pair was 83 percent.

EUROFINS LABORATORY REPORTS

- LDC VALIDATION REPORT – WEST
DEPTFORD (479719)
- EUROFINS LABORATORY REPORT
(479719 5/14/2014)
- EUROFINS LABORATORY REPORT
(LCMS 5/8/2014)
- EUROFINS LABORATORY REPORT
(LCMS 5/14/2014)

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TESTAMERICA LABORATORY REPORTS

- TESTAMERICA LABORATORY REPORT
(460-75344-1 5/30/2014)
- TESTAMERICA LABORATORY REPORT
(460-75345-1 5/30/2014)
- TESTAMERICA LABORATORY REPORT
(460-75346-1 5/30/2014)
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